



Messersmith Manufacturing, Inc.

2612 F Road

Bark River, MI 49807

(906) 466-9010

sales@burnchips.com

Wood Chip Storage & Handling System

1. Beam & Wall *(Additional Walls Special Order)*
2. Traveling Auger
3. Conveyor
4. Metering Bin & Auger



08/15/2006



08/23/200









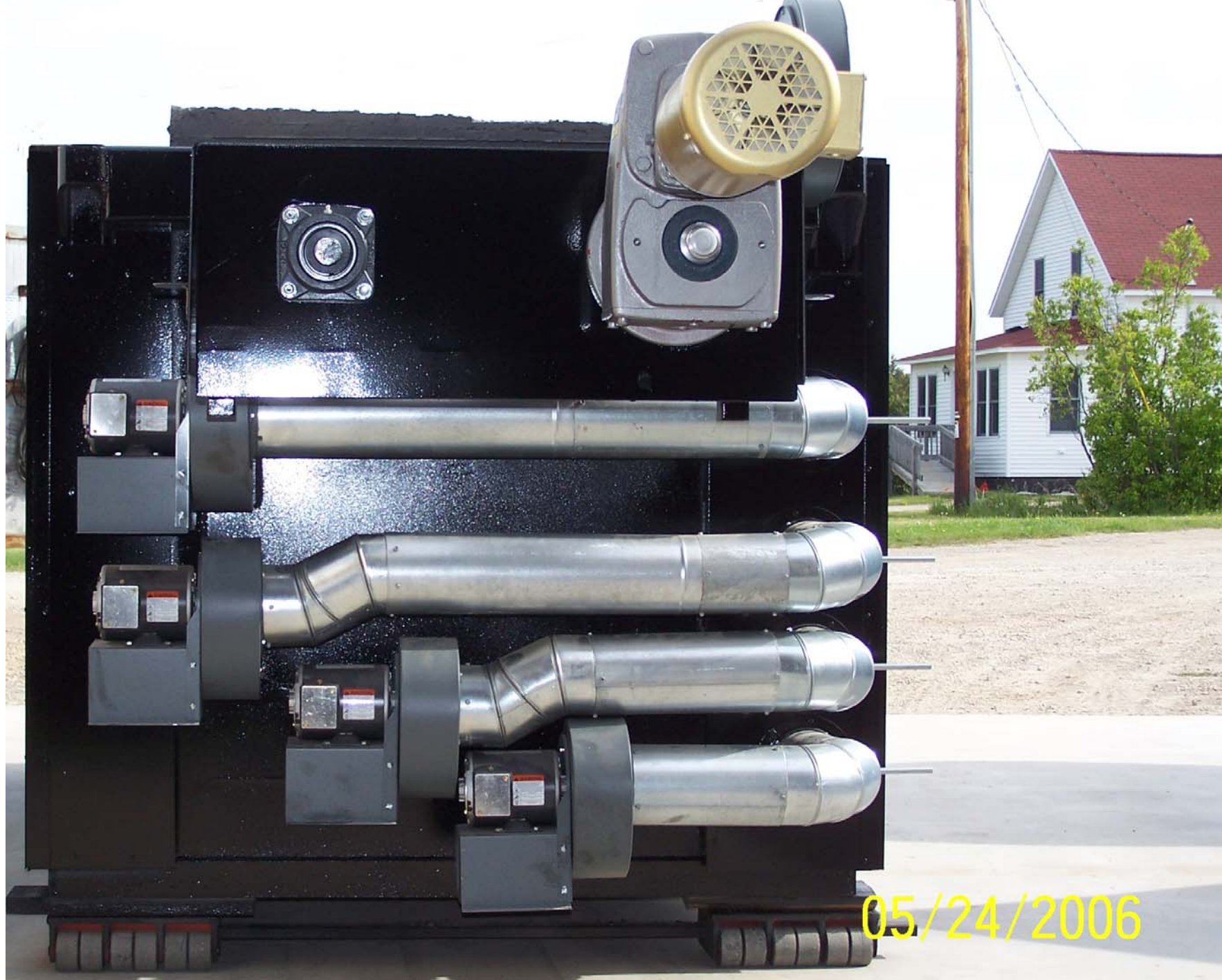
11/01/2006



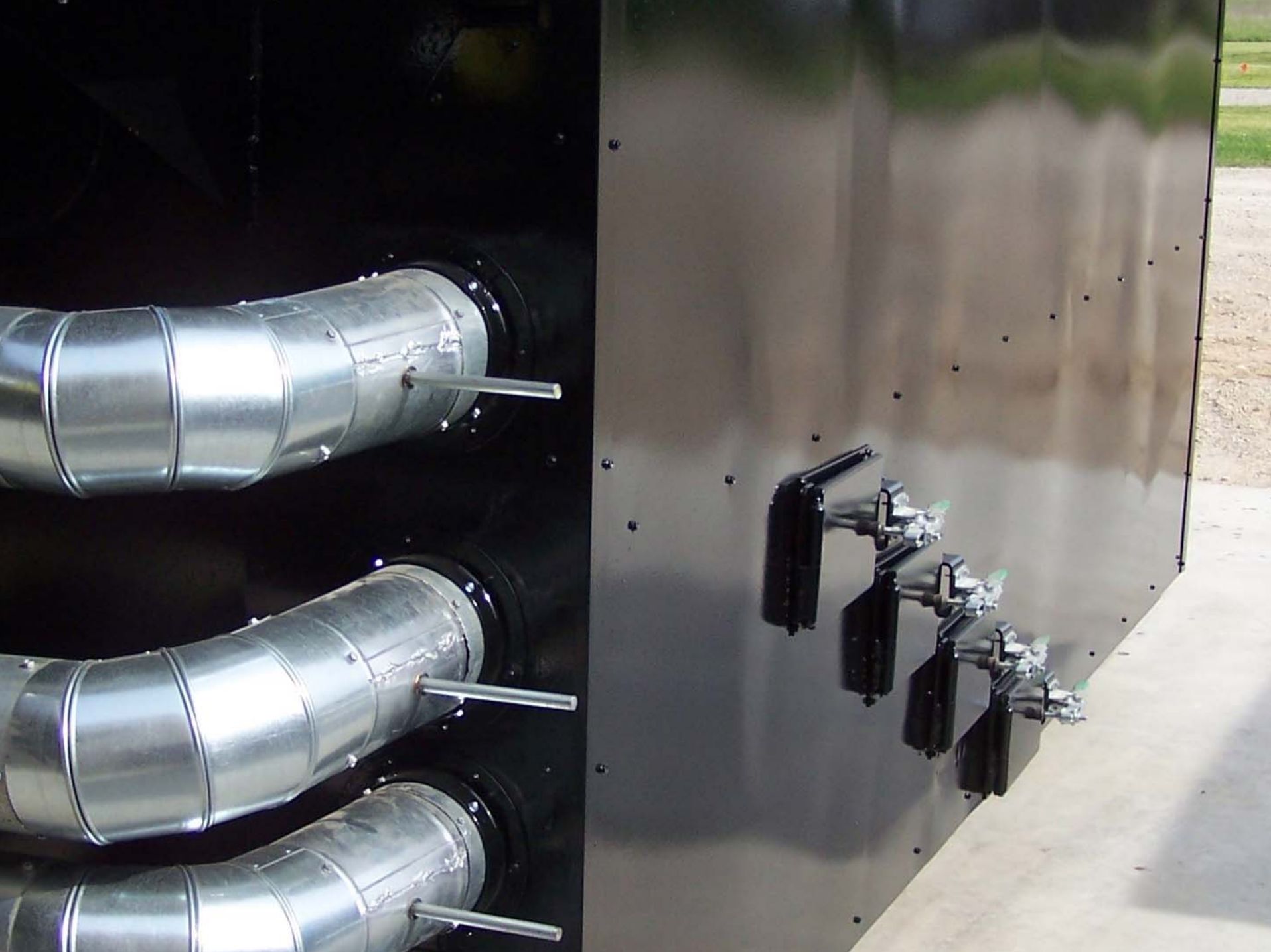
11/18/2006

Combustion System

- Stoker Auger
- Firebox
- Sloped Grate
- Under Fire Fans
- Over Fire Fan



05/24/2006



Boiler

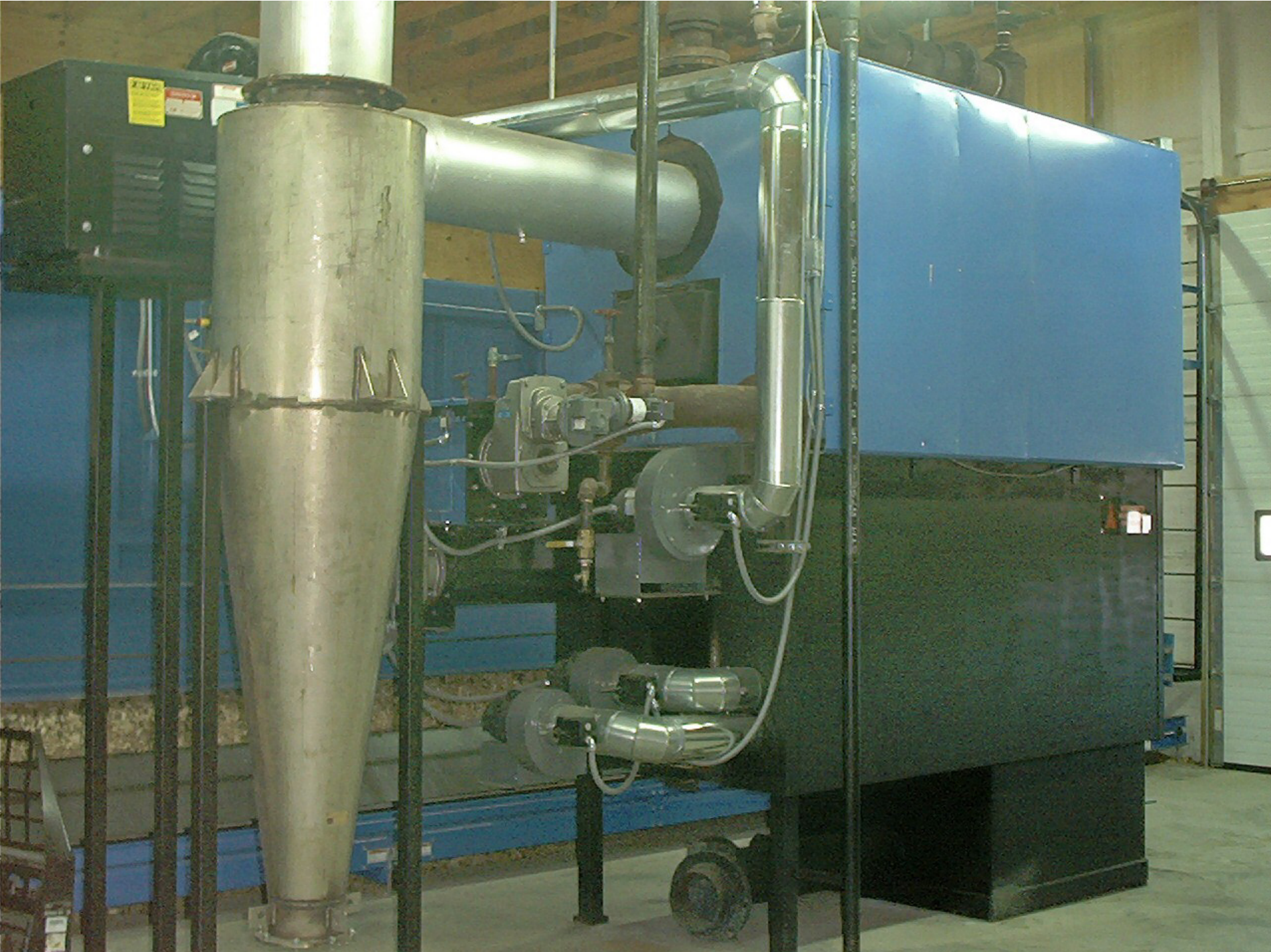
- Hurst Boiler *(3 pass fire tube construction)*
- Tube Cleaning System





Emission Control & Stack

- Cyclone or Multicyclone *(if needed)*
- Induced Draft Fan
- Stack





10/09/2006



FUEL QUALITY

- Reliable supply (This is your first step don't skip it!)
- Long stringy pieces wrap up around auger
 1. Chipping tends to be the best except on small diameter wood.
 2. Grinding tends to be worse especially on bark.
- A guide for chip size?
 1. ***(Think of a business card 1/8" thick, or smaller)***
 2. The auger can reduce a somewhat larger chip to small enough size if you can crush it using only one hand into smaller pieces. (Use a glove, too many slivers otherwise.)

Fuel Quality

- *Excessive fines create a dusty environment*
- Things that affect heating value of biomass:
 1. Rotted material
 2. Moisture content (*BTU / wt. DB is about equal for most biomass*) Roughly 9000Btu/lb DB
- *Ash Content (Wood < Bark < Grass)*
- *Trends of mineral content in plants:*
 1. *Perennials < Annuals (For their stems)*
 2. *Wood < Bark*











01/20







01/26/2007







CAUTION
THIS DEVICE POWERED
FROM SEVERAL SOURCES
DISCONNECT SWITCH
WILL NOT SHUT OFF ALL SOURCES
OF ELECTRICAL ENERGY

480 VOLTS

THIS ENCLOSURE
CONTAINS
HIGH VOLTAGE
ELECTRICAL EQUIPMENT
AUTHORIZED
PERSONNEL ONLY


**MESSERSMITH
MANUFACTURING, INC.**
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10/09/2006

Remember the Truck we started to unload?

I Think the boiler is still on the truck.



08/15/2006

Watch your Head!!!!!!

Messersmith Wood Chip Burning System

Larry Klope, Engineer

Messersmith Manufacturing, Inc.

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North Carolina Locations 07	
System Output	Budget Price
mmbtu/hr	\$,000
0.5	178
0.75	205
1	207
1.5	219
2	233
2.5	238
3	246
3.5	248
4	262
4.5	278
5	290
6	310
7	320
8.5	356
10	392
13	445

